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IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) A special effect device in which picture signals are read out from a frame buffer based on an address signal to impart a desired special effect to a picture corresponding to the picture signals read out from said frame buffer, said special effect device comprising:

address signal generating means for generating a readout address signal for said picture signals stored in said frame buffer so that, by rupturing a picture portion within an area at an optional position of said picture, defined by a circle having a radius of an optional size, with the center of the circle as a rupturing point, a folded figure will be obtained which has the circumference of said circle as a topological boundary,

~~wherein said address signal generating means transforms a coordinate system of said picture to a rectangular coordinate system and the rectangular system is then transformed to a polar coordinate system~~ the shape of the folded figure is prescribed by a function $F(\theta)$,

wherein the function $F(\theta)$ is represented by the equation (1-1):

$$F(\theta)=F'(t)=\begin{cases}4(y_p-y_q)(t-0.5)^2+y_q & (0.0\le t<0.5)\\ 4(y_r-y_q)(t-0.5)^2+y_q & (0.5\le t<1.0)\end{cases} \qquad (1\text{-}1)$$

where

$t=\theta\times 1\text{Plickle}\ (\mathrm{mod}\,2\pi)$;

which satisfies the equation (1-2):

$$y_p, y_r = (16.0 + (\text{fix AmpMax} + \text{fix Random} \times \text{Rnd}) \times 4.0)/16.0$$
$$y_q = (4.5 + (\text{fix AmpMin} + \text{fix Random} \times \text{Rnd}) \times 1.75)/16.0$$

(1-2)

$$0.5 \le y_p, y_r \le 2.0$$
$$1.0/16.0 \le y_q \le 0.5;$$

where Rnd is a random number between 0.0 and 1.0.

2. (Currently Amended) The special effect device according to claim 1 wherein, with the radius of an optional size, the contraction ratio fixscale of said picture signals folded and output to said radius of the optional size radius and the function F(θ) prescribing the shape of the folded figure, a readout address signal (R, Θ) on the polar coordinate system in an area for outputting a folded picture portion is generated by the equation (2-3):

$$R = f_1((r - \text{radius}) \times f_2(\theta))$$
$$\Theta = \theta$$

(2-3);

a readout address signal (R, Θ) on the polar coordinate system in an area for outputting a non-folded picture portion is generated by the equation (2-4):

$$R = f_3(r)$$
$$\Theta = \theta$$

(2-4);

the readout address signal (R, Θ) on the polar coordinate system is converted to the rectangular coordinate system to generate a readout address signal (X0, Y0) by the equation (2-8):

$$x0 = x - cx$$
$$y0 = y - cy \qquad (2\text{-}8);$$

and wherein

a readout address signal (X, Y) in case the position of said rupture point in the rectangular coordinate system of said picture signals is (cx, cy) is generated by the equation (2-9):

$$r = \sqrt{x0^2 + y0^2}$$
$$\theta = \arctan\left(\frac{y0}{x0}\right) \qquad (2\text{-}9)$$

~~where the function F(θ) is represented by the equation (1-1):~~

$$\left[\left[\quad F(\theta) = F'(t) = \begin{cases} 4(y_p - y_q)(t-0.5)^2 + y_q & (0.0 \le t < 0.5) \\ 4(y_r - y_q)(t-0.5)^2 + y_q & (0.5 \le t < 1.0) \end{cases}\right]\right] \qquad (1\text{-}1)$$

~~where~~

$$\left[\left[t = \theta \times 1\text{Plickle} \pmod{2\pi}; \right]\right]$$

~~which satisfies the equation (1-2):~~

$$\left[\left[\begin{array}{l} y_p, y_r = (16.0 + (\text{fix AmpMax} + \text{fix Random} \times \text{Rnd}) \times 4.0)/16.0 \\ y_q = (4.5 + (\text{fix AmpMin} + \text{fix Random} \times \text{Rnd}) \times 1.75)/16.0 \end{array}\right]\right] \quad \text{(1-2)}$$

~~where Rnd: random number of [0.0, 1.0]~~

$$\left[\left[\begin{array}{l} 0.5 \le y_p, y_r \le 2.0 \\ 1.0/16.0 \le y_q \le 0.5; \end{array}\right]\right]$$

the equation (2-3) satisfies the equations (2-5) and (2-6):

$$f_1(r) = \begin{cases} \text{radius} - r \times \text{fixScale} & (0 \le r < \text{radius}) \\ \text{max} & (\text{radius} \le r) \end{cases}$$

$$f_2(\theta) = F(\theta) \quad \text{(2-5)}$$

(2-6);

the equation (2-4) satisfies the equation (2-7):

$$f_3(r) = \begin{cases} \text{max} & (0 \le r < \text{radius}) \\ r & (\text{radius} \le r) \end{cases} \quad \text{(2-7)}$$

where radius = fixRadius× picture height; and wherein

in the equations (2-5) and (2-6), max indicates the generation of the readout address signal for reading out a signal other than the picture signals stored in said frame buffer.

3. (Currently Amended) An address signal generating device for generating an address signal for reading out picture signals corresponding to a picture from a frame buffer, comprising:

address signal generating means for generating a readout address signal for said picture signals stored in said frame buffer so that, by rupturing a picture portion within an area at an optional position of said picture, defined by a circle having a radius of an optional size, with the center of the circle as a rupturing point, a folded figure will be obtained which has the circumference of said circle as a topological boundary,

wherein ~~said address signal generating means transforms a coordinate system of said picture to a rectangular coordinate system and the rectangular system is then transformed to a polar coordinate system~~ the shape of the folded figure is prescribed by function $F(\theta)$,

where the function $F(\theta)$ is represented by the equation (1-1):

$$F(\theta) = F'(t) = \begin{cases} 4(y_p - y_q)(t-0.5)^2 + y_q & (0.0 \le t < 0.5) \\ 4(y_r - y_q)(t-0.5)^2 + y_q & (0.5 \le t < 1.0) \end{cases} \quad (1\text{-}1)$$

where

$$t = \theta \times \text{IPlickle} \pmod{2\pi};$$

which satisfies the equation (1-2):

$$y_p, y_r = (16.0 + (\text{fix AmpMax} + \text{fix Random} \times \text{Rnd}) \times 4.0)/16.0$$
$$y_q = (4.5 + (\text{fix AmpMin} + \text{fix Random} \times \text{Rnd}) \times 1.75)/16.0 \quad (1\text{-}2)$$

$$0.5 \le y_p, y_r \le 2.0$$
$$1.0/16.0 \le y_q \le 0.5;$$

where Rnd is a random number between 0.0 and 1.0.

4. (Currently Amended) An address signal generating method for generating an address signal for reading out picture signals corresponding to a picture from a frame buffer, comprising:

an address signal generating step of generating a readout address signal for said picture signals stored in said frame buffer so that, by rupturing a picture portion of an area at an optional position of said picture defined by a circle having a radius of an optional size, with the center of the circle as a rupturing point, a folded picture will be obtained which has the circumference of said circle as a topological boundary,

wherein ~~said address signal generating step transforms a coordinate system of said picture to a rectangular coordinate system and the rectangular system is then transformed to a polar coordinate system~~ the shape of the folded figure is prescribed by function F(θ),

where the function F(θ) is represented by the equation (1-1):

(1-1)

$$F(\theta) = F'(t) = \begin{cases} 4(y_p - y_q)(t-0.5)^2 + y_q & (0.0 \le t < 0.5) \\ 4(y_r - y_q)(t-0.5)^2 + y_q & (0.5 \le t < 1.0) \end{cases}$$

where

$$t = \theta \times 1\text{Plickle} \pmod{2\pi};$$

which satisfies the equation (1-2):

$$y_p, y_r = (16.0 + (\text{fix AmpMax} + \text{fix Random} \times \text{Rnd}) \times 4.0)/16.0$$
$$y_q = (4.5 + (\text{fix AmpMin} + \text{fix Random} \times \text{Rnd}) \times 1.75)/16.0$$

(1-2)

$$0.5 \leq y_p, y_r \leq 2.0$$
$$1.0/16.0 \leq y_q \leq 0.5;$$

where Rnd is a random number between 0.0 and 1.0.

5. (Currently Amended) An address signal generating program for having a computer execute an address signal generating process for reading out picture signals corresponding to a picture from a frame buffer, comprising:

said address signal generating process including generating a readout address signal for said picture signals stored in said frame buffer so that, by rupturing a picture portion of an area at an optional position of said picture defined by a circle having a radius of an optional size, with the center of the circle as a rupturing point, a folded picture portion will be obtained which has the circumference of said circle as a topological boundary,

wherein ~~said address signal generating process transforms a coordinate system of said picture to a rectangular coordinate system and the rectangular system is then transformed to a polar coordinate system~~ the shape of the folded figure is prescribed by function $F(\theta)$,

where the function F(θ) is represented by the equation (1-1):

$$F(\theta)=F'(t)=\begin{cases}4(y_p-y_q)(t-0.5)^2+y_q & (0.0\le t<0.5)\\ 4(y_r-y_q)(t-0.5)^2+y_q & (0.5\le t<1.0)\end{cases}$$

(1-1)

where

$t=\theta\times 1\text{Plickle}\ (\mathrm{mod}\,2\pi);$

which satisfies the equation (1-2):

$$y_p, y_r=(16.0+(\text{fix AmpMax}+\text{fix Random}\times\text{Rnd})\times 4.0)/16.0$$
$$y_q=(4.5+(\text{fix AmpMin}+\text{fix Random}\times\text{Rnd})\times 1.75)/16.0$$

(1-2)

$$0.5\le y_p, y_r\le 2.0$$
$$1.0/16.0\le y_q\le 0.5;$$

where Rnd is a random number between 0.0 and 1.0.